INSURANCE INJURY REPORT

Passenger Cars, Vans, Pickups, and Utility Vehicles

Highway Loss Data Institute
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Insurance Injury Report

1984-1986 Models
HLDI I86-1

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Summary

This Highway Loss Data Institute (HLDI) report presents the frequency of claims for injuries to occupants of 1984, 1985, and 1986 model year passenger cars, vans, pickup trucks, and utility vehicles. Results are shown separately for all injury claims and for those claims for which the medical losses exceeded $250, $500, and $1,000.

Principal Findings

Passenger Cars

- Eleven of the 13 cars with the best results (more than 40 percent better than average) were large models, mostly station wagons and passenger vans. Ten of these 13 cars were manufactured in the United States.
- All of the 17 cars with the worst results (more than 40 percent worse than average) were small two-door or four-door vehicles. Both the two-door and four-door versions of the Chevrolet Chevette, Chevrolet Spectrum, and Nissan Sentra were among the cars with the worst results. Twelve were imported models; eleven from Japan and one from Korea.
- Among the cars with the best injury loss experience, the Pontiac Parisienne station wagon had the lowest overall claim frequency (48 percent below average) and the lowest frequency of claims exceeding $250 (53 percent below average) The Plymouth Voyager had the lowest frequency of claims greater than $500 (47 percent below average). The Volvo 240 station wagon had the lowest frequency of claims greater than $1,000 (50 percent below average).
- Among the cars with the worst injury loss experience, the four-door Chevrolet Spectrum had the highest overall injury claim frequency (77 percent above average), the highest frequency of claims exceeding $250 (92 percent above average), and the highest frequency of claims exceeding $500 (93 percent above average). The two-door Chevrolet Chevette had the highest frequency of claims greater than $1,000 (55 percent above average).
- As a group, small cars had the worst results and large cars had the best, but this size relationship does not hold for every vehicle series because of considerable variation within size groups. For example, among small four-door models, there was nearly a threefold difference between the overall claim frequencies of the Saab 900 and Chevrolet Spectrum. Both the two-door and four-door Saab 900, which are classed as small cars, had better results than any two-door or four-door midsize model.

Vans, Pickups, Utility Vehicles

- Among vans, pickups, and utility vehicles, large utility vehicles had the best injury experience and small utility vehicles and small pickups had the worst.
- The GMC Suburban (1/2T), Chevrolet Suburban (1/2T and 3/4T), Ford E-150 Club Wagon, GMC 2500 Series, and Ford F-250 Super Cab had the lowest overall injury claim frequencies. The Toyota 4Runner, Toyota Standard Bed pickups, and Isuzu Standard Bed pickups had the highest frequencies.
- Injury claim frequencies were closely related to vehicle size, with the larger vehicles having lower claim frequencies.

INTRODUCTION

The Highway Loss Data Institute (HLDI) is a nonprofit, public service organization that gathers, processes, and publishes insurance data concerned with human and economic losses associated with motor vehicle use, especially with the ways such losses vary among different kinds of vehicles.

This report compares the frequencies of claims for injuries to occupants of 1984 through 1986 model year passenger cars, vans, pickups, and utility vehicles. In addition to the frequencies of all claims, frequencies are given separately for claims with medical payments exceeding $250, $500, and $1,000. The results are given for individual vehicle series as well as for various groupings based on vehicle size and body style.

In calculating injury claim frequencies, all injuries in a crash-involved vehicle resulting in claims for medical expenses made under personal injury protection insurance coverages are counted as a single claim. A description of these first-party coverages, which principally insure against medical losses to occupants of the insured vehicles themselves, is given in Appendix A. The data analysis methods used in the preparation of this report are detailed in Appendix B. Definitions are given in Appendix C, and Appendix D contains a complete list of the vehicles covered by this report. The data used were supplied by 13 insurers: Aetna, Allstate, Fireman's Fund, GEICO, Kemper, Liberty Mutual, Nationwide, Prudential, Safeco, Sentry, State Farm, Travelers, and USAA.

This report is based on injury coverages and injury claims involving 1984 through 1986 models in the period from their introductions through December 1986. It does not include the results for vehicles discontinued prior to the 1986 model year.

Results and Discussion

This report presents injury claim frequency results for 1984-86 model year vehicles. Results are presented in two sections: The first summarizes the results for passenger cars and the second for vans, pickups, and utility vehicles. The frequency of all injury claims and the frequencies of claims with medical payments exceeding $250, $500, and $1,000 are shown for those vehicles with sufficient exposure.* The results for the larger medical claims categories indicate the frequency of occurrence of increasingly severe injuries. Each claim frequency result, whether for passenger cars, vans, pickups, or utility vehicles, is presented in relative terms, with 100 representing the claim frequency for all passenger cars combined in each claim size category.

The relative injury claims experience of particular vehicles does not change substantially from model year to model year providing that the basic design of the vehicle remains essentially unchanged. HLDI has published the results of a statistical analysis (HLDI Report A-26) for selected 1981-83 passenger cars that demonstrated that the injury results of individual model year vehicles were generally consistent across model years when the basic vehicle designs remained the same. Because of the general consistency of injury results from model year to model year and because substantial amounts of exposure are needed to produce reliable injury claim frequency results, the data for model years 1984-86 were combined for those vehicles with basic designs that remained unchanged. Vehicle series that were discontinued prior to 1986 (e.g., Chevrolet Citation and Renault Fuego, which were both produced only through model year 1985) are not included. Vehicle series that were redesigned in 1986 (e.g., Honda Accord, which was a small car prior to 1986) are included in the report for model year 1986 only. Newly introduced vehicles (e.g., the Chevrolet Astro Van in 1985 and Hyundai Excel in 1986) are also included. For each vehicle series and each vehicle subgroup, a separate relative claim frequency was calculated for each model year. The overall result for each vehicle series was then obtained by weighting these relative claim frequencies by the applicable exposure for each model year. (For additional explanation of this procedure, see Appendix B.)

Beginning with model year 1987, the federal government is requiring automobile manufacturers to install front-seat automatic restraint systems—either automatic belts or air bags—in 10 percent of passenger cars. The percentage of vehicles covered by the regulation (49 CFR Sec. 571.208) increases for successive model years to 100 percent for 1990 model year cars. A small percentage of 1986 Ford Tempo and Mercury Topaz models were equipped with driver-side air bag systems, and small percentages of 1985-86 Volkswagen Golf and 1984-86 Volkswagen Jetta models were equipped with automatic seat belt systems. In this report, the results for these vehicles are predominantly for cars with manual lap/shoulder belt restraint systems. The Toyota Cressida, however, has had automatic seat belt systems as standard equipment since the 1981 model year. Mercedes-Benz equipped all its 1986 models and some of its 1985 models with air bags. None of the Mercedes-Benz air-bag equipped models had accumulated sufficient exposure for reporting their results. The increasing availability of automatic restraints is expected to increase the number of occupants protected in crashes. As newer models of the cars included in this report become available with automatic restraints as standard equipment, the injury results are likely to be better than those from comparable models without automatic restraints; this will occur to the extent that the designs chosen by the manufacturers for particular car lines increase the numbers of front seat occupants protected in crashes.

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*The exposure thresholds for reporting results were 5,000 insured vehicle years for all claims; 10,000 years for claims greater than $250; 15,000 years for claims greater than $500; and 25,000 years for claims greater than $1,000. The results shown in this report were standardized to reduce the effects due to differences in the mix of operator age group among different vehicles. Standardizing for this nonvehicle factor ensures that its mix is the same for each result. It should be noted that other nonvehicle factors could vary among different vehicles and that any effects resulting from such factors have not necessarily been eliminated from the results presented in this report. The standardization procedure is described in detail in Appendix B.

Passenger Cars

The total passenger car exposure for the three model years included in this report was over 7.4 million insured vehicle years. Table 1 presents the claim frequencies by claim size for each model year. Claim frequencies were substantially lower for each successively larger medical cost group. The frequency of claims exceeding $250 was approximately one-half the overall claim frequency, the frequency of claims exceeding $500 was about two-fifths the overall frequency, and the frequency of claims greater than $1,000 was about one-fourth the overall frequency.

The total amount of money paid out, however, was dramatically influenced by the larger claims. For example, claims exceeding $1,000, although representing only about 25 percent of all claims, accounted for nearly 85 percent of the total dollars for medical payments. Claims exceeding $500 accounted for 93 percent of the total dollars, and claims over $250 accounted for nearly 97 percent.

Table 2 summarizes the individual 1984-86 models with the lowest overall injury claim frequencies listed in increasing order of their overall relative claim frequency. The vehicle series with the best results (bold print) have at least one result that is more than 40 percent lower than the all-car result (a relative claim frequency of less than 60 for any of the four claim-size categories).

Of the 13 cars with the best injury results, 11 were large, one was midsize, and one was small; nine were station wagons or passenger vans. Ten were manufactured in the United States, two in Sweden, and one in Great Britain.

The vehicle with lowest claim frequency within each claim-size category was either a station wagon or a passenger van. The Pontiac Parisienne station wagon had the lowest overall claim frequency (52) and the lowest frequency (47) of claims exceeding $250. The Plymouth Voyager had the lowest frequency (53) of claims greater than $500. The Volvo 240 station wagon had the lowest frequency (50) of claims over $1,000.

Table 3 summarizes the 1984-86 models with the highest

TABLE 1 Personal Injury Protection Coverages—Claim Frequencies by Model Year and Size of Claim

Model Year	Total Exposure (Insured Vehicle Years)	Claim Frequencies Per 1,000 Insured Vehicle Years			
		All Claims	>$250	>$500	>$1,000
1986	1,224,124	22.4	11.6	8.3	5.5
1985	2,568,755	21.5	11.9	8.7	5.9
1984	3,651,468	19.9	11.2	8.3	5.7

TABLE 2 1984-86 Passenger Cars With the Lowest Overall Injury Claim Frequencies—Personal Injury Protection Coverages

Make and Series	Exposure (Insured Vehicle Years)	Relative Claim Frequencies By Size of Claim			
		All	>$250	>$500	>$1,000
Pontiac Parisienne-S.W.	**12,229**	**52**	**47**		
Mercury Grand Marquis-S.W.	**10,778**	**53**	**52**		
Oldsmobile Custom Cruiser	**20,936**	**54**	**51**	**56**	
Buick Electra-S.W.	**8,839**	**54**			
Mercury Grand Marquis-2 Dr.	**10,752**	**55**	60		
Jaguar XJ6	**12,253**	**57**	61		
Volvo 240-S.W.	**26,203**	**58**	**57**	**55**	**50**
Chevrolet Caprice-S.W.	**41,580**	60	**55**	**55**	**57**
Mercury Marquis-S.W.	8,526	60			
Dodge Diplomat	**13,773**	61	**59**		
Porsche 944 Coupe	14,268	62	64		
Cadillac Brougham	31,369	62	67	70	75
Plymouth Voyager	**74,159**	63	**59**	**53**	**51**
Mercury Grand Marquis-4 Dr.	95,827	63	65	65	65
Ford Crown Victoria-S.W.	**18,382**	64	60	**58**	
Ford Crown Victoria-4 Dr.	77,391	64	65	65	63
Lincoln Town Car	67,436	64	71	73	73
Dodge Caravan	**74,709**	65	63	60	**56**
BMW 500 Series	13,988	65	63		
Ford Aerostar*	12,297	65	69		
Saab 900-4 Dr.	**16,906**	66	**57**	**59**	
Plymouth Gran Fury	7,951	66			

Vehicle series listed in bold type have the best injury loss experience (i.e., at least one result that is more than 40 percent better than the corresponding all-car result).

***1986 models only**

overall injury claim frequencies listed in decreasing order of their overall relative claim frequency. The vehicle series with the worst results (bold print) have at least one result that is more than 40 percent higher than the all-car result (a relative claim frequency of more than 140 for any of the claim-size categories).

The 17 cars with the worst results are small vehicles. Both the two-door and four-door versions of the Chevrolet Chevette, Chevrolet Spectrum, and Nissan Sentra were among the cars with the worst injury experience. Twelve of the 17 were imported models, 11 from Japan and one from Korea. The only domestic models were the two-door and four-door Chevrolet Chevette, two-door Pontiac 1000, Dodge Charger, and Plymouth Turismo.

The four-door Chevrolet Spectrum had the highest overall claim frequency (177), the highest frequency (192) of claims exceeding $250, and the highest frequency (193) of claims greater than $500. For vehicles with claims over $1,000 and sufficient exposure available to report a result, the two-door Chevrolet Chevette had the highest claim frequency (155).

Table 4 presents relative injury claim frequency results for all of the 1984-86 models with sufficient exposure. Results are shown for individual series and for each car size and body style group. The individual series results in Table 4 are listed within each group in ascending sequence of their overall claim frequencies.

The results in Table 4 indicate that, as a group, cars with smaller wheelbases had higher injury losses than cars with larger wheelbases. For example, large four-door models had relative claim frequencies of 70 or less for each of the four claim-size categories, whereas small four-door models had relative claim frequencies of about 120. However, this size relationship does not hold for every vehicle series because of considerable variation within size groups. Especially noteworthy were the Saab 900 two-door and four-door models, which are small cars with better results than any midsize two-door or four-door model.

Table 4 also shows that there were large differences in the loss experiences of cars within the same car size and body style categories. For example, among small four-door models the highest claim frequency (177 for the Chevrolet Spectrum) was nearly three times the lowest (66 for the Saab 900).

(Text continues on page 12.)

TABLE 3 1984-86 Passenger Cars With the Highest Overall Injury Claim Frequencies—Personal Injury Protection Coverages

Make and Series	Exposure (Insured Vehicle Years)	Relative Claim Frequencies By Size of Claim			
		All	>$250	>$500	>$1,000
Chevrolet Spectrum-4 Dr.**	**15,586**	**177**	**192**	**193**	
Hyundai Excel-4 Dr.*	**9,322**	**161**			
Mitsubishi Mirage**	**5,286**	**158**			
Chevrolet Spectrum-2 Dr.**	**11,125**	**153**	**156**		
Chevrolet Sprint-2 Dr.**	**6,196**	**152**			
Nissan Pulsar	**40,496**	**151**	**149**	**149**	139
Mitsubishi Tredia	**12,584**	**149**	**167**		
Chevrolet Chevette-2 Dr.	**57,457**	**149**	**155**	**153**	**155**
Plymouth Colt-4 Dr.**	**6,784**	**145**			
Chevrolet Chevette-4 Dr.	**57,897**	**143**	**145**	**144**	**142**
Pontiac 1000-2 Dr.	**11,513**	**142**	**159**		
Nissan Sentra-4 Dr.	**51,231**	**142**	**143**	**146**	**148**
Dodge Charger	**49,116**	**141**	135	136	130
Plymouth Turismo	**49,161**	140	**142**	138	134
Dodge Colt-4 Dr.**	8,446	140			
Nissan Sentra-2 Dr.	**87,938**	139	140	**144**	**144**
Dodge Colt-2 Dr.**	9,691	139			
Renault Alliance-2 Dr.	34,259	139	130	133	130
Mitsubishi Cordia	**11,173**	137	**143**		
Mercury Lynx-2 Dr.**	6,572	137			
Mazda 323-4 Dr.*	5,281	137			
Renault Encore-4 Dr.	14,987	136	128		
Toyota Corolla-2 Dr.	39,322	133	137	136	125
Subaru DL/GL Sedan-4 Dr.**	20,371	132	129	130	
Renault Encore-2 Dr.	33,565	132	123	118	118
Chevrolet Cavalier-2Dr.	110,476	131	130	132	128
Pontiac 1000-4 Dr.	9,052	131			
Renault Alliance-4 Dr.	37,143	131	128	126	119
Nissan 200SX	**47,671**	127	134	138	**143**

Vehicle series listed in bold type have the worst injury loss experience (i.e., at least one result that is more than 40 percent worse than the corresponding all-car result).

***1986 Models Only**
****1985 and 1986 Models Only**

TABLE 4
1984-86 PASSENGER CAR RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	SIZE OF CLAIM ALL	>$250	>$500	>$1000
84-86	All	All	7444346	100	100	100	100
		SMALL CARS					
	TWO-DOOR MODELS		941981	126	125	125	123
84-86	Saab	900	20420	70	61	64	
84-86	Honda	Prelude	61073	97	92	90	86
85-86	Volkswagen	GTI	5859	101			
85-86	Volkswagen	Golf	10086	102	97		
84-86	Mazda	626	19917	103	103	100	
84-86	Honda	Civic	56501	104	105	102	101
86	Toyota	Celica	12725	109	115		
84-86	Volkswagen	Scirocco	13135	115	107		
84-86	Subaru	Hatchback	13350	115	110		
84-86	Chrysler	Laser	48886	115	108	105	102
84-86	Toyota	Tercel	37582	117	116	118	120
84-86	Mitsubishi	Starion	6116	119			
84-86	Dodge	Daytona	41469	120	119	116	113
84-86	Isuzu	Impulse	14508	123	132		
85-86	Plymouth	Colt	7977	124			
85-86	Ford	Escort	43344	125	125	119	109
84-86	Nissan	200SX	47671	127	134	138	143
84-86	Renault	Encore	33565	132	123	118	118
84-86	Toyota	Corolla	39322	133	137	136	125
84-86	Mitsubishi	Cordia	11173	137	143		
85-86	Mercury	Lynx	6572	137			
84-86	Renault	Alliance	34259	139	130	133	130
84-86	Nissan	Sentra	87938	139	140	144	144
85-86	Dodge	Colt	9691	139			
84-86	Plymouth	Turismo	49161	140	142	138	134
84-86	Dodge	Charger	49116	141	135	136	130
84-86	Pontiac	1000	11513	142	159		
84-86	Chevrolet	Chevette	57457	149	155	153	155
84-86	Nissan	Pulsar	40496	151	149	149	139
85-86	Chevrolet	Sprint	6196	152			
85-86	Chevrolet	Spectrum	11125	153	156		
85-86	Mitsubishi	Mirage	5286	158			

(See notes on page 11.)

TABLE 4 (Cont'd)
1984-86 PASSENGER CAR RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
			SMALL CARS (CONT'D)				
	FOUR-DOOR MODELS		**775484**	**121**	**120**	**119**	**118**
84-86	Saab	900	16906	66	57	59	
84-86	Mazda	626	58430	96	88	89	90
85-86	Volkswagen	Jetta	29862	102	102	103	102
84-86	Nissan	Stanza	41128	103	102	102	102
85-86	Volkswagen	Golf	11345	110	104		
84-86	Honda	Civic	45463	112	111	111	110
85-86	Chevrolet	Nova	18855	115	110	101	
84-86	Toyota	Corolla	115237	115	119	121	118
84-86	Plymouth	Horizon	74718	116	109	106	102
84-86	Dodge	Omni	60924	118	113	109	105
84-86	Toyota	Tercel	18488	121	119	119	
85-86	Ford	Escort	20439	121	128	119	
84-86	Pontiac	1000	9052	131			
84-86	Renault	Alliance	37143	131	128	126	119
85-86	Subaru	DL/GL Sedan	20371	132	129	130	
84-86	Renault	Encore	14987	136	128		
86	Mazda	323	5281	137			
85-86	Dodge	Colt	8446	140			
84-86	Nissan	Sentra	51231	142	143	146	148
84-86	Chevrolet	Chevette	57897	143	145	144	142
85-86	Plymouth	Colt	6784	145			
84-86	Mitsubishi	Tredia	12584	149	167		
86	Hyundai	Excel	9322	161			
85-86	Chevrolet	Spectrum	15586	177	192	193	
	STATION WAGONS/PASSENGER VANS		**199661**	**93**	**91**	**90**	**91**
84-86	Toyota	Van	27658	75	73	77	85
84-86	Volkswagen	Vanagon	8879	78			
85-86	Subaru	DL/GL 4WD	18394	84	78	76	
84-86	Toyota	Tercel 4WD	23404	90	92	90	
86	Nissan	Stanza	6260	93			
85-86	Ford	Escort	16048	95	89	93	
85-86	Subaru	DL/GL	17025	98	89	86	
84-86	Honda	Civic	23716	100	94	95	
84-86	Nissan	Sentra	31485	104	102	103	111
84-86	Toyota	Tercel	18546	106	116	108	

(See notes on page 11.)

TABLE 4 (Cont'd)
1984-86 PASSENGER CAR RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
		SMALL CARS (CONT'D)					
	SPORTS & SPECIALTY		**293920**	**103**	**106**	**108**	**109**
84-86	Porsche	944 Coupe	14268	62	64		
84-86	Chevrolet	Corvette	37107	80	88	96	94
86	Mazda	RX-7	5956	84			
84-86	Nissan	300ZX 2+2	18942	92	92	100	
84-86	Volkswagen	Cabriolet/Rabbit Conv.	8634	100			
84-86	Nissan	300ZX	45963	104	107	113	112
84-86	Pontiac	Fiero	86129	116	118	117	118
85-86	Toyota	MR2	8843	118			
84-86	Honda	Civic CRX	49208	121	123	121	122
		MIDSIZE CARS					
	TWO-DOOR MODELS		**1257029**	**105**	**106**	**107**	**108**
84-86	Oldsmobile	Cutlass Ciera	29395	80	75	74	78
84-86	Pontiac	6000	6835	85			
84-86	Oldsmobile	Cutlass	181371	87	92	93	98
84-86	Pontiac	Grand Prix	59042	88	92	94	96
84-86	Chrysler	LeBaron	23368	91	94	95	
86	Honda	Accord	7598	93			
84-86	Buick	Century	10787	94	78		
84-86	Chevrolet	Monte Carlo	105838	95	100	103	101
84-86	Buick	Regal	123636	97	97	98	101
84-86	Chevrolet	Celebrity	22549	98	101	102	
84-86	Ford	Thunderbird	121757	102	106	104	107
85-86	Buick	Somerset	30379	107	107	107	101
84-86	Dodge	600	10278	108	103		
84-86	Mercury	Cougar	99568	111	116	122	125
85-86	Oldsmobile	Calais	38057	116	122	123	125
85-86	Pontiac	Grand Am	39288	117	117	115	113
84-86	Oldsmobile	Firenza	10686	117	113		
84-86	Dodge	Aries	15659	117	117	110	
84-86	Plymouth	Reliant	18754	117	114	113	
84-86	Ford	Tempo	65585	123	124	125	127
84-86	Mercury	Topaz	16085	123	133	134	
84-86	Buick	Skyhawk	56272	123	117	121	123
84-86	Pontiac	Sunbird	50561	124	117	114	112
84-86	Chevrolet	Cavalier	110476	131	130	132	128

(See notes on page 11.)

TABLE 4 (Cont'd)
1984-86 PASSENGER CAR RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
			MIDSIZE CARS (CONT'D)				
	FOUR-DOOR MODELS		**1851890**	**94**	**93**	**93**	**93**
86	Ford	Taurus	10691	73	75		
84-86	Oldsmobile	Cutlass	67053	76	76	77	73
84-86	Volvo	240	47951	78	76	77	78
84-86	Peugeot	505	12457	79	85		
84-86	Toyota	Camry	109417	80	77	73	72
84-86	Pontiac	Bonneville	51246	81	81	77	79
85-86	Toyota	Cressida	17035	81	84	88	
84-86	Oldsmobile	Cutlass Ciera	167769	84	81	80	77
85-86	Plymouth	Caravelle	12158	84	74		
84-86	Pontiac	6000	82257	84	82	82	83
84-86	Buick	Century	137589	86	83	84	82
84-86	Mercury	Marquis	67994	86	89	91	89
86	Honda	Accord	31380	87	79	79	84
84-86	Chrysler	New Yorker	52068	87	87	88	94
85-86	Chrysler	LeBaron GTS	23828	87	79	78	
84-86	Ford	LTD	87382	90	93	94	93
85-86	Dodge	Lancer	16131	90	80	87	
84-86	Chevrolet	Celebrity	133527	91	88	86	87
85-86	Nissan	Maxima	37188	91	95	101	106
84-86	Cadillac	Cimarron	18098	93	104	98	
84-86	Dodge	600	26007	94	95	93	87
84-86	Audi	4000	15051	95	89	91	
84-86	Chrysler	LeBaron	41165	99	103	105	108
84-86	Buick	Skyhawk	25966	102	90	90	87
85-86	Mitsubishi	Galant	6668	106			
84-86	Mercury	Topaz	46301	107	103	98	98
84-86	Plymouth	Reliant	57398	107	103	101	105
84-86	Dodge	Aries	47942	109	110	109	107
84-86	Ford	Tempo	177243	110	113	113	112
84-86	Oldsmobile	Firenza	25059	113	111	113	107
86	Pontiac	Grand Am	9704	114			
84-86	Chevrolet	Cavalier	128395	118	121	121	118
84-86	Pontiac	Sunbird	39777	121	114	103	105
86	Oldsmobile	Calais	6051	121			

(See notes on page 11.)

TABLE 4 (Cont'd)
1984-86 PASSENGER CAR RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
			MIDSIZE CARS (CONT'D)				
	STATION WAGONS/PASSENGER VANS		**390187**	**82**	**77**	**76**	**76**
84-86	Volvo	240	26203	58	57	55	50
84-86	Mercury	Marquis	8526	60			
84-86	Pontiac	6000	13499	69	66		
84-86	Volkswagen	Quantum	8819	72			
84-86	Buick	Century	20755	73	67	67	
84-86	American	Eagle	10175	74	61		
84-86	Chrysler	LeBaron	9093	74			
84-86	Oldsmobile	Cutlass Ciera	28385	75	70	68	68
84-86	Ford	LTD	31116	80	79	80	79
85-86	Nissan	Maxima	6209	81			
84-86	Chevrolet	Celebrity	55934	82	73	71	73
84-86	Pontiac	Sunbird	8664	89			
84-86	Dodge	Aries	23613	91	86	87	
84-86	Plymouth	Reliant	26756	91	81	77	77
84-86	Dodge	Colt Vista	8557	93			
84-86	Oldsmobile	Firenza	9872	95			
84-86	Plymouth	Colt Vista	6983	97			
84-86	Chevrolet	Cavalier	67513	98	93	93	93
84-86	Buick	Skyhawk	7322	103			
	SPORTS & SPECIALTY		**642721**	**108**	**110**	**111**	**114**
84-86	BMW	500 Series	13988	65	63		
84-86	Lincoln	Mark VII	16193	77	88	99	
84-86	Audi	5000	48753	80	84	87	97
84-86	Lincoln	Continental	18250	80	79	84	
84-86	Volvo	740/760	22925	87	91	92	
84-86	Chrysler	LeBaron Conv.	14387	90	94		
84-86	BMW	318i/325 2D	46871	91	93	99	100
84-86	Dodge	600 Conv.	10005	94	102		
85-86	BMW	318i/325 4D	8919	95			
84-86	Ford	Mustang Conv.	11895	96	91		
84-86	Toyota	Celica Supra	21629	102	106	104	
84-86	Pontiac	Firebird	92290	114	120	122	126
84-86	Mercury	Capri	12210	120	125		
84-86	Chevrolet	Camaro	171887	125	127	128	132
84-86	Ford	Mustang	105507	126	126	127	127

(See notes on page 11.)

TABLE 4 (Cont'd)
1984-86 PASSENGER CAR RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
			LARGE CARS				
	TWO-DOOR MODELS		**46126**	**67**	**75**	**78**	**80**
84-86	Mercury	Grand Marquis	10752	55	60		
84-86	Ford	Crown Victoria	10089	70	76		
85-86	Oldsmobile	Ninety-Eight	5189	73			
84-86	Chevrolet	Caprice	13538	75	84		
	FOUR-DOOR MODELS		**544019**	**68**	**69**	**69**	**70**
84-86	Dodge	Diplomat	13773	61	59		
84-86	Mercury	Grand Marquis	95827	63	65	65	65
84-86	Ford	Crown Victoria	77391	64	65	65	63
84-86	Plymouth	Gran Fury	7951	66			
84-86	Chevrolet	Caprice/Impala	118974	67	69	71	71
85-86	Buick	Electra	43090	68	68	68	68
85-86	Oldsmobile	Ninety-Eight	51240	70	76	73	74
84-86	Pontiac	Parisienne	37665	70	69	70	76
86	Buick	LeSabre	5821	72			
86	Oldsmobile	Delta 88	15662	73	67	68	
84-86	Chrysler	New Yorker 5th Ave	76611	75	80	81	83
	STATION WAGONS/PASSENGER VANS		**299594**	**61**	**57**	**57**	**55**
84-86	Pontiac	Parisienne	12229	52	47		
84-86	Mercury	Grand Marquis	10778	53	52		
84-86	Oldsmobile	Custom Cruiser	20936	54	51	56	
84-86	Buick	Electra	8839	54			
84-86	Chevrolet	Caprice	41580	60	55	55	57
84-86	Plymouth	Voyager	74159	63	59	53	51
84-86	Ford	Crown Victoria	18382	64	60	58	
86	Ford	Aerostar	12297	65	69		
84-86	Dodge	Caravan	74709	65	63	60	56
85-86	Chevrolet	Astro Van	16541	68	65	72	

(See notes on page 11.)

TABLE 4 (Cont'd)
1984-86 PASSENGER CAR RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
			LARGE CARS (CONT'D)				
	SPORTS & SPECIALTY		201735	66	70	73	75
84-86	Jaguar	XJ6	12253	57	61		
84-86	Cadillac	Brougham	31369	62	67	70	75
84-86	Lincoln	Town Car	67436	64	71	73	73
84-86	BMW	733/735i	5480	67			
85-86	Cadillac	DeVille 4D	58322	68	70	72	74
85-86	Cadillac	DeVille 2D	19128	83	89	95	

NOTES FOR TABLE 4

Results are standardized by the distribution:

Youthful Operator	No Youthful Operator
10%	90%

Minimum exposure requirements for reporting:

All Claims — 5,000 Vehicle Years
Claims > $250 — 10,000 Vehicle Years
Claims > $500 — 15,000 Vehicle Years
Claims > $1000 — 25,000 Vehicle Years

Vans, Pickups, and Utility Vehicles

This section presents injury claim frequency results for 1984-86 model year vans, pickups, and utility vehicles. The results for pickups are presented for small and standard pickups. Small pickups are defined as those with curb weight of less than 3,200 pounds. The utility vehicle results are divided into three wheelbase size groups: Small utility vehicles are those with wheelbases less than 100 inches: intermediate utility vehicles are those with wheelbases in the range 100 to 120 inches: and large utility vehicles as those with wheelbases exceeding 120 inches.

The results for vans, pickups, and utility vehicles are presented in relative terms with the value 100 corresponding to the result for all *passenger cars* combined in each claim size category. Thus, the value 57 for the overall relative claim frequency of all 1984-86 model year vans indicates a claim frequency result that was 43 percent better than the result for all 1984-86 model year passenger cars.

The total exposure for vans, pickups, and utility vehicles represented in the three model years included in this report was approximately 1.9 million insured vehicle years. Figure 1 displays the results by size of claim for each of the six vehicle size groups. For pickups and utility vehicles, there was a strong relationship between vehicle size and injury claim frequencies; the larger vehicles tended to have lower claim frequencies. The best claim frequency results were for large utility vehicles. (The Chevrolet Suburban (1/2T) accounted for more than 60 percent of the exposure for this vehicle group.) Small pickups and small utility vehicles had the highest claim frequency results. (The Ford Bronco II and Jeep CJ-7 contributed over 96 percent of the small utility vehicle group's exposure.)

Table 5 presents relative injury claim frequency results for all of the 1984 through 1986 model year vans, pickups, and utility vehicles with sufficient exposure. Results are shown for individual series and for each vehicle group. Within each vehicle group, the individual series are listed in ascending sequence of their overall relative claim frequencies.

As Table 5 shows, the vehicles with the lowest overall injury claim frequencies were the GMC Suburban 1/2T (36), Chevrolet Suburban 1/2T (37), and the Chevrolet Suburban 3/4T (45), all of which are large utility vehicles; the GMC 2500 Series (42) and Ford F-250 Super Cab (44), which are standard pickups; and the Ford E-150 Club Wagon (42), which is a van. The Toyota 4Runner (108), Isuzu Standard Bed (106), and Toyota Standard Bed (105) had the highest relative claim frequencies for all claims.

FIGURE 1 1984-86 Model Year Van, Pickup, and Utility Vehicle Relative Claim Frequencies — Personal Injury Protection Coverages

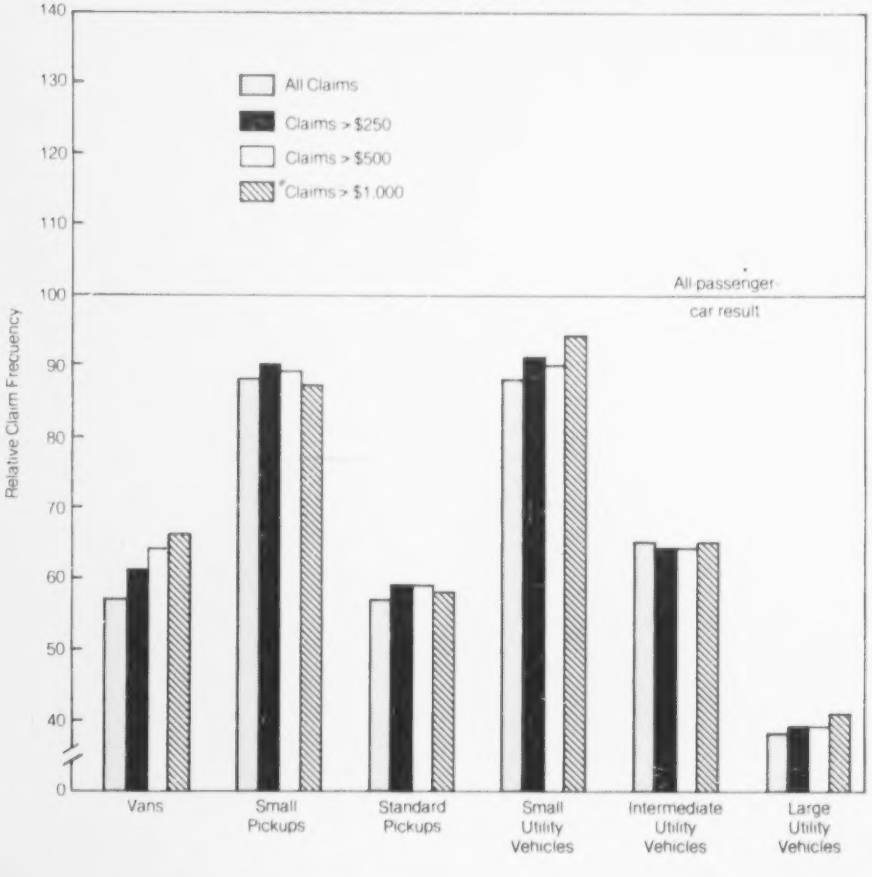

TABLE 5
1984-86 VAN, PICKUP, AND UTILITY VEHICLE
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
		VANS					
	ALL VANS		**271525**	**57**	**61**	**64**	**66**
84-86	Ford	E-150 Club Wagon (1/2-3/4T)	10671	42	44		
84-86	GMC	Vandura (3/4T)	13327	49	53		
84-86	Dodge	B250 (3/4T)	8740	50			
84-86	Chevrolet	Sportvan (3/4T)	13624	51	51		
84-86	Ford	E-150 Econoline (1/2-3/4T)	68505	52	58	62	61
84-86	Chevrolet	Chevyvan (3/4T)	49794	56	57	59	60
84-86	Dodge	B250 Cargo Van	26510	58	67	68	62
84-86	Dodge	B150 (1/2T)	9938	60			
84-86	Dodge	B150 Cargo Van	12026	64	71		
84-86	Chevrolet	Chevyvan (1/2T)	12330	67	70		
85-86	Chevrolet	Astro Cargo Van	11586	67	70		
84-86	Dodge	Mini Ram/Royal Van	7675	73			
84-86	Toyota	Cargo Van	8795	96			
		PICKUPS					
	SMALL PICKUPS		**520482**	**88**	**90**	**89**	**87**
86	Ford	Ranger Super Cab	5812	65			
84-86	GMC	S15	23544	72	67	67	
84-86	Isuzu	Long Bed	12045	82	86		
84-86	Chevrolet	S10	111630	83	81	79	77
84-86	Ford	Ranger	140326	85	88	87	85
84-86	Toyota	Xtra Cab	37032	88	91	98	96
84-86	Dodge	Ram50/D50	32709	91	96	96	93
84-86	Toyota	Long Bed (1/2T)	32310	92	100	96	98
86	Nissan	Standard Bed	6818	93			
84-86	Mitsubishi	Standard Bed	12142	94	96		
86	Mazda	Standard Bed	12122	95	103		
84-86	Toyota	Standard Bed	54600	105	109	109	108
84-86	Isuzu	Standard Bed	17486	106	111	108	

(See notes on page 15.)

TABLE 5 (Cont'd)
1984-86 VAN, PICKUP, AND UTILITY VEHICLE
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
		PICKUPS (CONT'D)					
	STANDARD PICKUPS		**571146**	**57**	**59**	**59**	**58**
84-86	GMC	2500 Series (3/4T)	8228	42			
84-86	Ford	F-250 Super Cab	13751	44	49		
84-86	Chevrolet	20 Series (3/4T)	28017	48	49	51	51
84-86	Ford	F-150 Super Cab	24167	50	54	54	
84-86	Ford	F-250 (3/4T)	40971	54	52	50	48
84-86	Dodge	D250/W250 (3/4T)	8380	56			
84-86	Ford	F-150 (1/2-3/4T)	181036	57	58	57	57
84-86	GMC	1500 Series (1/2T)	38579	57	63	67	68
84-86	Chevrolet	10 Series (1/2T)	147172	59	61	60	61
84-86	Dodge	D150/W150 (1/2T)	60008	62	61	61	57
84-86	Chevrolet	El Camino	11889	70	67		
84-86	Toyota	4Runner	5203	108			
		UTILITY VEHICLES					
	SMALL UTILITY VEHICLES		**138145**	**88**	**91**	**90**	**94**
84-86	Ford	Bronco II	101338	83	86	84	86
84-86	Jeep	CJ-7	32063	99	107	110	118
	INTERMEDIATE UTILITY VEHICLES		**354499**	**65**	**64**	**64**	**65**
84-86	Jeep	Grand Wagoneer	12381	47	44		
84-86	GMC	Jimmy (1/2T)	5408	50			
84-86	Chevrolet	K10 Blazer (1/2T)	26985	52	52	59	61
84-86	Ford	Bronco	35989	57	55	53	57
84-86	Dodge	AD150/AW150 (1/2T)	22576	58	63	59	
84-86	Isuzu	Trooper II	10818	60	50		
84-86	Jeep	Wagoneer	14507	61	56		
84-86	Jeep	Cherokee	67764	61	58	60	59
84-86	GMC	S15 Jimmy	26557	72	64	63	62
84-86	Chevrolet	S10 Blazer	124540	75	77	76	79

(See notes on page 15.)

TABLE 5 (Cont'd)
1984-86 VAN, PICKUP, AND UTILITY VEHICLE
RELATIVE CLAIM FREQUENCY BY SIZE OF CLAIM --
PERSONAL INJURY PROTECTION COVERAGES

MODEL YEARS	MAKE	SERIES	EXPOSURE	ALL	SIZE OF CLAIM >$250	>$500	>$1000
		UTILITY VEHICLES (CONT'D)					
	LARGE UTILITY VEHICLES		43207	38	39	39	41
84-86	GMC	Suburban (1/2T)	7934	36			
84-86	Chevrolet	Suburban (1/2T)	26573	37	38	38	38
84-86	Chevrolet	Suburban (3/4T)	6762	45			

NOTES FOR TABLE 5

Results are standardized by the distribution:

Youthful Operator	No Youthful Operator
10%	90%

Minimum exposure requirements for reporting:

All Claims	—	5,000 Vehicle Years
Claims > $250	—	10,000 Vehicle Years
Claims > $500	—	15,000 Vehicle Years
Claims > $1000	—	25,000 Vehicle Years

APPENDIX A

Specifications of Injury Coverages

Personal Injury Protection (PIP) Coverages

Personal injury protection coverages provide first-party insurance against medical and other types of losses in "no-fault" states.

The personal injury protection coverages reported in this study were based on data from the 19 states and the District of Columbia listed below.

Personal Injury Protection (PIP) Coverage States:

Colorado	Michigan
Connecticut	Minnesota
Delaware	New Jersey
District of Columbia	New York
Florida	North Dakota
Georgia	Oregon
Hawaii	Pennsylvania
Kansas	South Carolina
Kentucky	Texas
Maryland	Utah

APPENDIX B

Method of Data Analysis

Personal Injury Protection Coverages

Results in this report are based on personal injury protection (PIP) coverages that are provided in so-called no-fault states. These coverages were selected because they provide medical expense reimbursement to injured occupants of the insured vehicle.

Use of PIP insurance data to identify crashes involving injury has certain limitations because these data cannot provide information on all occupant injuries. This occurs when claims for injury costs are not made under PIP coverages because of the availability of other sources of medical expense reimbursements, such as bodily injury liability and/or health insurance coverages. Consequently, PIP claim frequencies do not include all of the crashes involving injury. This limitation should not distort comparisons among different vehicles.

Vehicle Description and Identification

The Vehicle Identification Numbers (VINs) of most new automobiles sold in the United States are individually unique numbers that contain, in coded form, detailed information as to each vehicle's make, model year, series,* and other distinguishing characteristics.

The very specific vehicle types for which results are presented in this report were derived from the VINs of the individual automobiles.

*See Appendix C for definitions.

Only data with valid VINs were used for this report. Each VIN was decoded into a set of specific characteristics. For the purposes of this report the vehicle characteristics of primary concern were make, model year, series, body style, and wheelbase.

Exposure

Exposure, in terms of insured vehicle years, was computed for each individual vehicle from the coverage data. The total number of insured vehicle years for each vehicle series was then obtained by accumulating the exposure for all of the individual vehicles of that vehicle series.

For each vehicle series, the exposure was also computed for each operator age group — youthful operators and no youthful operators.*

Claim Frequency

Both pending and paid claims for an individual vehicle were first matched with its corresponding coverage data to ensure that the crash had occurred within an appropriate period of coverage for that vehicle. In every instance in which multiple claims were made for the same crash — e.g., when more than one occupant of the car incurred medical expenses — the claims were treated as a single injury claim in the calculation of claim frequencies. It should be noted that some medical expenses can sometimes be incurred even though the occupants are not injured. This can occur, for example, when precautionary medical examinations are undertaken even though no injuries are apparent or, in fact, found.

All injury claims involving medical expense reimbursements were used, together with the corresponding exposure, to compute the claim frequencies in terms of the number of claims per 1,000 insured vehicle years. The overall claim frequency results were computed using both paid and pending claims. In addition to the overall claim frequency results, separate claim frequency results were computed for claims in which the medical losses exceeded $250, $500, and $1,000. The latter three results provide indications of the extent to which particular cars are over- or under-involved in crashes resulting in more significant injuries. Claims involving nonmedical losses only and claims settled without payments were not used. Thus, the claim frequencies represent the number of crashes per 1,000 insured vehicle years in which one or more injuries occurred resulting in medical expense claim payments under PIP insurance coverages.

Standardization

The losses for different vehicles can vary substantially in relation to certain nonvehicle factors. One important factor with which claim frequency varies is the operator age group, and the mix of operator ages can vary considerably among different vehicle types — so considerably that it could distort comparisons of results between vehicles if not taken into account.

Youthful operators have higher insurance claim frequencies than older drivers. Thus, if two vehicle types have different proportions of youthful operators, this difference, if not taken into consideration, would be sufficient to bias comparisons. To reduce this effect, the results for each vehicle type were weighted, using the values shown below, to produce a weighted average of the actual results for each operator

age group. In this way the results for each vehicle type are based on the same mix, or distribution, of exposure for the two operator age groups.

Because the same weights are used for each vehicle type, the effects due to operator age group are present in equal amounts in the standardized results for each vehicle type. Therefore, to the extent that the age distributions within operator age group do not vary substantially for different vehicles, these effects can no longer bias comparisons among vehicles.

This standardization procedure is widely used in vital health statistics.* The basic principle of this standardization procedure is the introduction of a standard distribution of exposure for the different operator age groups.

Operator Age Group Weights

Youthful Operator	No Youthful Operator	Combined
0.1	0.9	1.0

Mathematical Procedures

This section describes, and illustrates with an example, the mathematical calculations performed in applying the standardization procedure to the injury loss information used for this report.

For a particular vehicle series (or group of vehicles), let C_i represent the total number of claims (paid and unpaid) and let E_i represent the total number of insured vehicle years of exposure, where

i = y means that the classification code assigned to the vehicle indicates youthful operator, and

i = n means that the classification code assigned to the vehicle indicates no youthful operator.

Thus, youthful and no youthful operator claim frequencies (f_y and f_n, respectively), in terms of the number of claims per 1,000 insured vehicle years, are calculated as

$$f_y = (C_y/E_y) \times 1{,}000, \text{ and } f_n = (C_n/E_n) \times 1{,}000 .$$

The above claim frequencies are then combined using the previously cited operator age group weights to obtain the standardized claim frequency (f) as follows:

$$f = (0.1)f_y + (0.9)f_n .$$

Example: 1986 Chevrolet Camaro

Number of Claims by Operator Age Groups		Exposure By Operator Age Groups	
Youthful	No Youthful	Youthful	No Youthful
$C_y = 210$	$C_n = 412$	$E_y = 4{,}927.63$	$E_n = 15{,}574.14$

Thus, the youthful and no youthful operator claim frequencies are:

$$f_y = (210/4{,}927.63) \times 1{,}000 = 42.6 \text{ and}$$

$$f_n = (412/15{,}574.14) \times 1{,}000 = 26.5.$$

The standardized claim frequency is calculated as follows:

$$f = (0.1)f_y + (0.9)f_n = (0.1)(42.6) + (0.9)(26.5) = 28.1.$$

Thus, the standardized claim frequency for the 1986 Chevrolet Camaro is 28.1 claims per 1,000 insured vehicle years of exposure.

Exposure Threshold For Reporting Results

A threshold of 5,000 insured vehicle years of exposure was selected for reporting the overall claim frequency results for vehicle groups and individual vehicle series. Consequently, no results are presented in this report for any of the vehicle series with smaller amounts of exposure. In addition, different thresholds were used to determine whether the claim frequency results for medical losses exceeding the specified dollar amounts were published. In order for the claim frequency results for medical losses exceeding $250 to be published, at least 10,000 insured years of exposure were required; for medical losses of greater than $500, the minimum exposure was 15,000; and for medical losses exceeding $1,000, the minimum exposure was 25,000 insured vehicle years.

It should be kept in mind that, in general, the greater the exposure associated with a reported claim frequency, the more confidence can be placed in it.

Combining Results for More Than One Model Year

The relative injury loss experience of particular vehicles does not change substantially from model year to model year providing that the basic design of the vehicle remains essentially unchanged. For this reason and because substantial amounts of exposure are needed to provide reliable injury claim frequency results, the data for model years 1984 through 1986 were combined for those vehicles with unchanged basic designs.

The aggregated model year result (R) for each vehicle series (i) was obtained by weighting the relative claim frequency for each model year (j) by the applicable exposure for each model year; that is,

$$R_i = \left(\sum (exp_{ij} (f_{ij}/F_j)) \right) / \left(\sum exp_{ij} \right) \times 100,$$

where

exp_{ij} = exposure for vehicle i for model year j,

f_{ij} = standardized claim frequency for vehicle i for model year j, and

F_j = standardized claim frequency for all passenger cars for model year j.

Example: Chevrolet Camaro

	1986	1985	1984
Exposure (exp)	20,502	44,584	106,801
Claim Frequency (f)	28.1	28.3	24.3
Claim Frequency (F)—all cars	22.4	21.5	19.9

Result = [(20,502 (28.1/22.4) + 44,584 (28.3/21.5) + 106,801(24.3/19.9))/(20,502 + 44,584 + 106,801)] x 100 = 125.

*For example, see Armitage P., *Statistical Methods in Medical Research* Wiley, New York, 1971.

APPENDIX C Definitions

Claim Frequency - The number of claims for a group of vehicles, divided by the exposure for that group.

Exposure - The time interval an individual vehicle is insured. Exposure for a group of vehicles is expressed in units of insured vehicle years.

First-Party Coverage -An insurance coverage under which the policyholder collects compensation for his losses from his own insurer regardless of fault.

No-Fault Auto Insurance - An auto insurance plan in which each driver/owner accepts financial responsibility for some or all losses sustained by himself, pedestrians hit by him, and occupants of his own vehicle in return for which he enjoys some immunity from liability for losses to third-party persons.

Operator Age Group - The factor that distinguishes those vehicles with a youthful rated driver from those vehicles without a youthful rated driver (see Youthful Operator).

Personal Injury Protection (PIP) Coverage - First-party no-fault coverage in which an insurer pays, within the specified limits, the medical, hospital, and other expenses of the insured, others in his vehicle, and pedestrians struck by him.

Rated Driver - The driver who, for insurance purposes, is considered to represent the greatest loss potential for the insured vehicles.

Vehicle Classifications - There are four vehicle classes, defined as follows:

1. **Passenger Cars** - There are four major body style groupings of passengers cars—regular two-door models, regular four-door models, station wagons and passenger vans, and sports and specialty models. Sports and specialty models include all two-seater cars, all convertibles, all midsize and large cars with two or fewer designated rear seating positions, and all luxury cars. Each body style group is further divided into classes based on wheelbase size (rounded to the nearest inch) defined as follows:

   Small - Cars with wheelbases less than or equal to 99 inches.

   Midsize - Cars with wheelbases greater than 99 inches and less than or equal to 109 inches.

   Large - Vehicles with wheelbases greater than 109 inches.

2. **Vans** - Fully enclosed vehicles with either no hood or a very short hood, in which the engine is placed at least 50 percent behind the the windshield. The driver's position is usually well forward, nearly beside the engine, usually within the forward 25 percent of the wheelbase. These vehicles are designed for cargo transport and are equipped with a right-side cargo access door and rear doors. The cargo area is not separated from the passenger area—both are enclosed under the same roof.

3. **Pickups** - Cargo-carrying vehicles, usually on a truck chassis, with an enclosed cab and a separate open cargo area. The open cargo area generally is a box with raised sides with an opening tailgate. There are also a small number of auto pickups that are similar to regular pickups except that they are built on a passenger car chassis. Pickups are further divided into two subgroups based on curb weight—small pickups (less than 3,200 pounds) and standard pickups (3,200 pounds or more).

4. **Utility Vehicles** - Vehicles built on a heavy-duty chassis capable of off-road use. They are of conventional construction with the driver behind the engine. The cargo and passenger areas are integral with the driver area. Many of these vehicles are equipped with soft or removable tops. Frequently, these vehicles are equipped with four-wheel drive. Utility vehicles are further divided into three subgroups based on wheelbase—small utility vehicles (less than 100 inches), intermediate utility vehicles (from 100 to 120 inches), and large utility vehicles (greater than 120 inches).

Vehicle Identification Number (VIN) - A code, variously comprising both numbers and letters; normally 8 to 17 characters in length, assigned to each vehicle by its manufacturer. The VIN uniquely identifies the vehicle within at least a 10-year time span and, in recent model year vehicles, almost always contains coding that identifies the make, series, model year, and other characteristics of each vehicle.

Vehicle Series - A name denoting a family of vehicles, within a make, with the same wheelbase and a degree of commonality in construction such as body, chassis, etc.

Youthful Operator - For the purposes of this report, all males (married or single) under 25 years of age and all unmarried females under 25 years of age.

APPENDIX D Vehicle Series Designations

PART A: PASSENGER CARS

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Acura	Integra*	S	S		
	Legend*				M
Alfa Romeo	GTV6				S
	Spider Convertible				S
American	Eagle		M	M	
Aston Martin	Lagonda				L
	Saloon				M
	Vantage				M
	Volante				M
Audi	GT Coupe	M			
	4000		M		
	4000 Quattro				S
	5000-4 Dr. & S.W.				M
	5000 Quattro*-4 Dr. & S.W.				M
Avanti	Avanti II				M
Bentley	Corniche Convertible				L
	Mulsanne				L
	Mulsanne-L				L
BMW	L7*				L
	318i/325-2 Dr.				M
	318i/325-4 Dr.**				M
	524TD**				M
	528e/533i				M
	535i**				M
	633CSi/635CSi				M
	733i/735i				L

(See notes on page 26.)

PART A: PASSENGER CARS (Cont'd)

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Buick	Century	M	M	M	
	Electra FWD**	L	L		
	Electra RWD			L	
	LeSabre	L*	L*	L**	
	Regal	M			
	Riviera*				M
	Skyhawk	M	M	M	
	Skylark*		M		
	Somerset**	M			
Cadillac	Brougham				L
	Cimarron		M		
	DeVille**-2 Dr. & 4 Dr.				L
	Eldorado*				M
	Fleetwood Limousine**				L
	Seville*				M
Chevrolet	Astro Van**			L	
	Camaro				M
	Caprice	L		L	
	Caprice/Impala		L		
	Cavalier	M	M	M	
	Cavalier Convertible				M
	Celebrity	M	M	M	
	Chevette	S	S		
	Corvette				S
	Corvette Convertible*				S
	Monte Carlo	M			
	Nova**		S		
	Spectrum**	S	S		
	Sprint	S**	S*		
Chrysler	Laser	S			
	LeBaron	M	M	M	
	LeBaron Convertible				M
	LeBaron GTS**		M		
	Limousine**				L
	New Yorker		M		
	New Yorker 5th Avenue		L		
	Newport		L		

(See notes on page 26.)

PART A: PASSENGER CARS (Cont'd)

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Dodge	Aries	M	M	M	
	Caravan			L	
	Charger/Shelby	S			
	Daytona	S			
	Diplomat		L		
	Lancer**		M		
	Omni		S		
	600	M	M		
	600 Convertible				M
Dodge/ Mitsubishi	Colt**	S	S		
	Colt Vista			M	
	Colt Vista 4WD**			M	
	Conquest	S			
Ferrari	Mondial Convertible				M
	Mondial Quattroval				M
	Testarossa*				M
	308/328				S
	308/328 Convertible**				S
Fiat	X 1/9				S
Ford	Aerostar*			L	
	Crown Victoria	L	L	L	
	Escort**	S	S	S	
	EXP*				S
	LTD		M	M	
	Mustang				M
	Mustang Convertible				M
	Taurus*		M	M	
	Tempo	M	M		
	Thunderbird	M			
GMC	Safari Van**			L	

(See notes on page 26.)

PART A: PASSENGER CARS (Cont'd)

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Honda	Accord*	M	M		
	Civic	S	S	S	
	Civic CRX				S
	Civic 4WD**			S	
	Prelude	S			
Hyundai	Excel*	S	S		
Isuzu	Impulse	S			
	I-Mark**	S	S		
Jaguar	XJ-S				M
	XJ-SC*				M
	XJ6				L
Lincoln	Continental				M
	Mark VII				M
	Town Car				L
Lotus	Esprit Turbo				S
Maserati	Biturbo				S
	Quattroporte				L
	Spyder Convertible*				S
	425*				M
Mazda	GLC			S	
	RX-7*				S
	323*	S	S		
	626	S	S		

(See notes on page 26.)

PART A: PASSENGER CARS (Cont'd)

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Mercedes Benz	190D/E*				M
	300E*				L
	300SDL*				L
	420SEL*				L
	500SEC/560SEC**				L
	500SEL/560SEL**				L
	560SL Convertible*				S
Mercury	Capri				M
	Cougar	M			
	Grand Marquis	L	L	L	
	Lynx**	S	S	S	
	Marquis		M	M	
	Sable*		M	M	
	Topaz	M	M		
Merkur	XR4Ti**				M
Mitsubishi	Cordia	S			
	Galant**		M		
	Mirage**	S			
	Starion	S			
	Tredia		S		
Nissan	Maxima**		M	M	
	Pulsar	S			
	Sentra	S	S	S	
	Stanza		S	S*	
	Stanza 4WD*			S	
	200 SX	S			
	300 ZX				S
	300 ZX 2+2				S

(See notes on page 26.)

PART A: PASSENGER CARS (Cont'd)

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Oldsmobile	Calais	M**	M*		
	Custom Cruiser			L	
	Cutlass	M	M		
	Cutlass Ciera	M	M	M	
	Delta 88*	L	L		
	Firenza	M	M	M	
	Ninety-Eight**	L	L		
	Toronado*				M
Peugeot	505		M	L	
Plymouth	Caravelle**		M		
	Gran Fury		L		
	Horizon		S		
	Reliant	M	M	M	
	Turismo	S			
	Voyager			L	
Plymouth/ Mitsubishi	Colt**	S	S		
	Colt Vista			M	
	Colt Vista 4WD**			M	
	Conquest	S			
Pontiac	Bonneville		M		
	Fiero				S
	Firebird				M
	Grand Am	M**	M*		
	Grand Prix	M			
	Parisienne		L	L	
	Sunbird	M	M	M	
	Sunbird Convertible				M
	1000	S	S		
	6000	M	M	M	
Porsche	911 Coupe				S
	911 Targa/Cabriolet				S
	928 Coupe				S
	944 Coupe				S

(See notes on page 26.)

PART A: PASSENGER CARS (Cont'd)

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Renault	Alliance	S	S		
	Alliance Convertible**				S
	Encore	S	S		
	Sportwagon			S	
Rolls Royce	Camargue				L
	Corniche Convertible				L
	Silver Spirit				L
	Silver Spur				L
Saab	900	S	S		
	9000*				M
Subaru	DL/GL	S*	S**	S**	
	DL/GL 4WD**			S	
	GL 4WD	S*	S**		
	Hatchback	S			
	Hatchback 4WD	S			
	XT Coupe**	S			
	XT Coupe DL**				S
	XT Coupe 4WD**	S			
Toyota	Camry		M		
	Celica*	S			
	Celica Supra				M
	Corolla	S	S		
	Cressida**		M	M	
	MR2**				S
	Supra*				M
	Tercel	S	S	S	
	Tercel 4WD			S	
	Van			S	
TVR	280i-2 Dr. & Convertible				S

(See notes on page 26.)

PART A: PASSENGER CARS (Cont'd)

MAKE	SERIES	2-DOOR MODEL	4-DOOR MODEL	S.W./ PASS.VAN	SPORTS/ SPECIALTY
Volkswagen	Cabriolet/Rabbit Convertible				S
	Golf**	S	S		
	GTI**	S			
	Jetta**	S	S		
	Quantum		M	M	
	Quantum 4WD**			M	
	Scirocco	S			
	Vanagon			S	
Volvo	240		M	M	
	740/760				M
	740/760 SW**				M
Yugo	Yugo*	S			

S - Small
M - Midsize
L - Large

* 1986 Models Only
** 1985 and 1986 Models Only

PART B: VANS, PICKUPS, AND UTILITY VEHICLES

VEHICLE CLASS	MAKE	SERIES
Vans	Chevrolet	Astro Cargo Van** Chevyvan (1/2T) Chevyvan (3/4T) Sportvan (1/2T) Sportvan (3/4T)
	Dodge	B150 (1/2T) B150 Cargo Van B250 (3/4T) B250 Cargo Van Mini Ram/Royal
	Ford	Aerostar Cargo Van* E-150 Club Wagon (1/2-3/4T) E-150 Econoline (1/2-3/4T) E-250 Club Wagon (3/4T) E-250 Econoline (3/4T)
	GMC	Rally Wagon (1/2T) Rally Wagon (3/4T) Safari Cargo Van** Vandura (1/2T) Vandura (3/4T)
	Toyota	Cargo Van
	Volkswagen	Vanagon Camper
Pickups	Chevrolet	Crew Cab (3/4T) El Camino S10 10 Series (1/2T) 20 Series (3/4T)

(See notes on page 30.)

PART B: VANS, PICKUPS, AND UTILITY VEHICLES (Cont'd)

VEHICLE CLASS	MAKE	SERIES
Pickups (Cont'd)	Dodge	Ram 50/D50 D150/W150 (1/2T) D250/W250 (3/4T)
	Ford	Courier Courier Long Bed F-150 (1/2-3/4T) F-150 Super Cab F-250 (3/4T) F-250 Super Cab Ranger Ranger Super Cab*
	GMC	Caballero S15 1500 Series (1/2T) 2500 Crew Cab (3/4T) 2500 Series (3/4T)
	Isuzu	Long Bed Long Cab (1/2T)* Standard Bed
	Jeep/AMC	Comanche* J10 Long Bed (1/2T) J20 Long Bed (3/4T)
	Mazda	Cab Plus* Long Bed* Standard Bed*
	Mitsubishi	Standard Bed
	Nissan	King Cab* Long Bed* Standard Bed*

(See notes on page 30.)

PART B: VANS, PICKUPS, AND UTILITY VEHICLES (Cont'd)

VEHICLE CLASS	MAKE	SERIES
Pickups (Cont'd)	Subaru	Brat
	Toyota	Long Bed (1/2T) Standard Bed Xtra Cab Xtra Cab Long Bed* 4Runner
Utility Vehicles	Chevrolet	K10 Blazer (1/2T) Suburban (1/2T) Suburban (3/4T) S10 Blazer
	Dodge	AD150/AW150 Ramcharger (1/2T)
	Ford	Bronco Bronco II
	GMC	Jimmy (1/2T) Suburban (1/2T) Suburban (3/4T) S15 Jimmy
	Isuzu	Trooper II
	Jeep/AMC	Cherokee CJ-7 Grand Wagoneer Wagoneer

(See notes on page 30.)

PART B: VANS, PICKUPS, AND UTILITY VEHICLES (Cont'd)

VEHICLE CLASS	MAKE	SERIES
Utility Vehicles (Cont'd)	Mitsubishi	Montero
	Suzuki	Samurai* Samurai Van*
	Toyota	Land Cruiser 4Runner Wagon

* 1986 Models Only
** 1985 and 1986 Models Only

HLDI Publications

Research reports published by the Highway Loss Data Institute are:

R72-1 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1972 Models,* June 1973.

R73-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1973 Models Compared with 1972 Models,* September 1973.

R73-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models,* March 1974.

R73-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Two Years,* December 1974.

R73-4 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1973 Models During Their First Three Years,* December 1975.

R74-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1974 Models,* May 1974.

R74-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Year,* December 1974.

R74-3 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1974 Models During Their First Two Years,* December 1975.

R75-1 *Automobile Insurance Losses, Collision Coverages, Initial Results for 1975 Models,* July 1975.

R75-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1975 Models During Their First Year,* December 1975.

R76-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1976 Models,* June 1976.

R76-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1976 Models During Their First Year, 1975 Models During Their First Two Years, 1974 Models During Their First Three Years,* December 1976.

R77-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1977 Models,* June 1977.

R77-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1977 Models During Their First Year, 1976 Models During Their First Two Years, 1975 Models During Their First Three Years,* December 1977.

R78-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1978 Models,* June 1978.

R78-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1978 Models During Their First Year, 1977 Models During Their First Two Years, 1976 Models During Their First Three Years,* January 1979.

R79-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1979 Models,* June 1979.

R79-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1979 Models During Their First Year, 1978 Models During Their First Two Years, 1977 Models During Their First Three Years,* December 1979.

R80-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1980 Models,* June 1980.

R80-2 *Automobile Insurance Losses, Collision Coverages; Variations by Make and Series, 1980 Models During Their First Year, 1979 Models During Their First Two Years, 1978 Models During Their First Three Years,* December 1980.

R81-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1981 Models,* July 1981.

R81-2 *Insurance Losses, Collision Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1981 Models During Their First Year, 1980 Models During Their First Two Years, 1979 Models During Their First Three Years,* December 1981.

R82-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1982 Models,* July 1982.

R82-2 *Insurance Losses, Collision Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1982 Models During Their First Year, 1981 Models During Their First Two Years; 1980 Models During Their First Three Years,* December 1982.

R83-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1983 Models,* June 1983.

R83-2 *Insurance Losses, Collision Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1983 Models During Their First Year, 1982 Models During Their First Two Years, 1981 Models During Their First Three Years,* January 1984.

R84-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1984 Models,* June 1984.

R84-2 *Insurance Losses, Collision Coverages; Passenger Vehicles, Vans, Pickups, and Utility Vehicles; 1984 Models During Their First Year, 1983 Models During Their First Two Years, 1982 Models During Their First Three Years,* January 1985.

R85-1 *Automobile Insurance Losses, Collision Coverages; Initial Results for 1985 Models,* July 1985.

R85-2 *Insurance Collision Report, Passenger Vehicles, Vans, Pickups, and Utility Vehicles, 1985 Models During Their First Year, 1984 Models During Their First Two Years, 1983 Models During their First Three Years,* January 1986.

R86-1 *Insurance Collision Report, Initial Results for 1986 Automobiles,* August 1986.

R86-2 *Insurance Collision Report, Passenger Cars, Vans, Pickups, and Utility Vehicles, 1986 Models During Their First Year, 1985 Models During Their First Two Years, 1984 Models During Their First Three Years* December 1986.

R87-1 *Insurance Collision Report, Initial Results for 1987 Automobiles,* July 1987.

V78-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles; 1978 Models During Their First Year, 1977 Models During Their First Two Years,* February 1979.

V79-1 *Automobile Insurance Losses, Non-Commercial Collisions Coverages; Variations by Make and Series, Vans, Pickups and Utility Vehicles; 1979 Models During Their First Year, 1978 Models During Their First Two Years,* April 1980.

V79-2 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Vans, Pickup Trucks, and Utility Vehicles,* October 1980.

V79-3 *Insurance Theft Losses; Vans, Pickups, and Utility Vehicles, 1979 Models,* May 1981.

V80-1 *Automobile Insurance Losses, Non-Commercial Collision Coverages; Variations by Make and Series, Vans, Pickups, and Utility Vehicles; 1980 Models During Their First Year, 1979 Models During Their First Two Years, 1978 Models During Their First Three Years,* December 1980.

V80-2 *Automobile Insurance Losses, Personal Injury Protection Coverages; Injury Claim Frequency Results by Size of Claim; Vans, Pickup Trucks, and Utility Vehicles, 1977-1980 Models,* September 1981.

I75-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974 and 1975 Models,* June 1976.

I75-2 *Automobile Insurance Losses, Percentage of Collision Claims with Associated Injury Claims for 1974 and 1975 Models,* March 1977.

I76-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models,* November 1977.

I76-2 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1974, 1975, and 1976 Models,* September 1978.

I77-1 *Automobile Insurance Losses, Injury Coverages; Claim Frequency Results for 1977 Models,* September 1978.

I78-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results for 1977 and 1978 Models,* September 1979.

I79-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim for 1977, 1978, and 1979 Models,* October 1980.

I80-1 *Automobile Insurance Losses, Personal Injury Protection Coverages; Claim Frequency Results by Size of Claim; 1978-1980 Models,* September 1981.

I81-1 *Insurance Losses, Personal Injury Protection Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1979-1981 Models,* September 1982.

I82-1 *Insurance Losses, Personal Injury Protection Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1980-1982 Models,* September 1983.

I83-1 *Insurance Losses, Personal Injury Protection Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1981-1983 Models,* September 1984.

I84-1 *Insurance Losses, Personal Injury Protection Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1982-1984 Models,* August 1985.

I85-1 *Insurance Injury Report, Passenger Cars, Vans, Pickups, and Utility Vehicles; 1983-1985 Models,* August 1986.

I86-1 *Insurance Injury Report, Passenger Cars, Vans, Pickups, and Utility Vehicles; 1984-1986 Models,* August 1987.

A-1 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1972 and 1973 Models,* May 1974.

A-2 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1972 and 1973 Models,* September 1974.

A-3 *Automobile Insurance Losses, Collision Coverages; A Comparison of Results for 1973, 1974 and 1975 Models,* July 1975.

A-4 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Density, 1974 and 1975 Models,* December 1975.

A-5 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Body Style, 1974 and 1975 Models,* December 1975.

A-6 *Automobile Insurance Losses, Collision Coverages; An Investigation of Relationships Between Losses and Engine Specifications, Using 1973 Models,* June 1976.

A-7 *Automobile Insurance Losses, Collision Coverages; Annual Increases and Seasonal Variations 1972, 1973, 1974 and 1975 Models,* June 1976.

A-8 *Automobile Insurance Losses, Injury Coverages; A Preliminary Comparison of Results for Volkswagen Rabbits with Passive and Active Seat Belts, 1975 and 1976 Models,* June 1977.

A-9 *Automobile Insurance Losses, Collision Coverages; A Comparison of Collision Claim Size Distributions for 1974, 1975, and 1976 Models,* November 1977.

A-10 *Automobile Insurance Losses, Injury Coverages; Comparisons of Claim Frequencies of Volkswagen Rabbits with Automatic and Manual Seat Belts, 1975, 1976, and 1977 Models,* June 1979.

A-11 *Automobile Insurance Losses, Collision Coverages; The Consistency of the Loss Experience of Specific Vehicles Produced in Several Years, 1975 to 1978 Models,* June 1979.

A-12 *Automobile Insurance Losses, Collision Coverages; An Assessment of the Effects of the Federal Safety Bumper Standard on the Losses for 1972 Through 1978 Models,* June 1980.

A-13 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; The Effects of Car Size on Crash Losses, 1977-1980 Models,* May 1981.

A-14 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; Comparisons of the Loss Experience of Two- and Four-Door Cars, 1978, 1979, and 1980 Models,* June 1981.

A-15 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverages; Relationships Between Injury and Collision Losses and Engine Options for Selected 1977-1979 Compact Cars,* June 1981.

A-16 *Automobile Insurance Losses, Collision Coverages; The Frequency of Claims Involving Salvage; Subcompact and Compact Cars; 1980 Models,* January 1982.

A-17 *Insurance Losses, Comprehensive Coverages; Non-Crash Fire Losses; 1979-1980 Models,* February 1982.

A-18 *Insurance Losses, Theft Coverages; The Distribution of Theft Loss Payment Amounts; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1981 Models During Their First Year, 1980 Models During Their First Two Years; 1979 Models During Their First Three Years,* June 1982.

A-19 *Insurance Losses, Theft Coverages; A Comparison of the Theft Loss Experience of General Motors Passenger Cars With and Without Factory-Installed Theft Deterrent Systems; 1980-1981 Models,* January 1983.

A-20 *Insurance Losses, Collision Coverages, A Comparison of the Collision Loss Experience of Subaru Models with 5 and 2.5 MPH Bumpers,* April 1983.

A-21 *Insurance Losses, Personal Injury Protection Coverages, Injury Claim Frequencies for Volkswagen Rabbits with Automatic and Manual Seat Belts, 1981 and 1982 Models,* April 1984.

A-22 *Insurance Losses, Collision Coverages, An Analysis of Salvage Credits, 1977 Through 1982 Model Year Cars,* July 1984.

A-23 *Injury and Collision Losses by Engine Option, Selected 1983 Models,* October 1985.

A-24 *Comparison of the Insurance Loss Experience of Unibody and Frame Construction Cars After a Collision Repair, 1981-82 Models,* October 1985.

A-25 *Relationships Between Losses and Vehicle Density, 1982-84 Models,* October 1985.

A-26 *Consistency of Model Year Injury Claim Frequency Results for Selected 1981-1983 Models,* May 1986.

A-27 *A Preliminary Evaluation of New York and New Jersey Insurance Injury Claim Results Before and After Enactment of Mandatory Seat Belt Legislation; 1983-85 Models,* May 1986.

T79-1 *Automobile Insurance Theft Losses by Make and Series; 1979 Models,* June 1980.

T80-1 *Automobile Insurance Theft Losses by Make and Series; 1979 and 1980 Models,* April 1981.

T81-1 *Insurance Losses, Theft Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1981 Models During Their First Year, 1980 Models During Their First Two Years, 1979 Models During Their First Three Years,* May 1982.

T82-1 *Insurance Losses, Theft Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1982 Models During Their First Year, 1981 Models During Their First Two Years, 1980 Models During Their First Three Years,* May 1983.

T83-1 *Insurance Losses, Theft Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1983 Models During Their First Year, 1982 Models During Their First Two Years, 1981 Models During Their First Three Years,* May 1984.

T84-1 *Insurance Losses, Theft Coverages; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1984 Models During Their First Year, 1983 Models During Their First Two Years, 1982 Models During Their First Three Years,* March 1985.

T85-1 *Insurance Theft Report; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1985 Models During Their First Year, 1984 Models During Their First Two Years, 1983 Models During Their First Three Years,* April 1986.

T86-1 *Insurance Theft Report; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1986 Models During Their First Year, 1985 Models During Their First Two Years, 1984 Models During Their First Three Years,* May 1987.